Report to the Governor

Executive Branch Electronic Mail Study

Respectfully Submitted

September 1, 2009

Executive Branch

Electronic Mail Study

State of Iowa Chief Information Officers Council

E-Mail Study Steering Committee

John Gillispie, Co-Chair
Department of Administrative Services

Rick Hindman, Co-Chair
Department of Natural Resources

Tom Huisman
Department of Human Services

Lesa Quinn
Department of Public Defense

Lorrie Tritch
Department of Administrative Services

Governor Chester J. Culver
Capitol Building
Des Moines, Iowa 50309

Dear Governor Culver:

At the request of your Chief of Staff, Charles Krogmeier, we organized the Chief Information Officers to undertake a study of the electronic mail (e-mail) services used throughout the Executive Branch agencies. We thank you for this opportunity to present our findings and recommendations.

In the following report, we address the issues and concerns expressed in Charles Krogmeier's April 23, 2009 letter. We compiled an inventory of the 23 Executive Branch e-mail systems and made an effort to document the services and features currently in use as well as the e-mail business requirements for each agency.

We made every effort to engage all agencies in a collaborative way. Most agencies feel the services they offer reflect the needs of their organizations. Including depreciation expense, the Executive Branch spends about $2 million annually for e-mail services. The agencies do feel, however, there are opportunities to improve e-mail security and disaster recovery, standardize services, define costs, and improve the ability of state government to comply with the open records law. Depending on the service delivery method chosen, there may be certain transition costs.

Collection of the costs associated with the agency e-mail services proved to be one of the most challenging aspects of this study. In many cases, the costs for the hardware, software, licenses, and technical support personnel were difficult for agencies to collect and the allocation of the full cost of operations is unknown. The underlying issue is that agencies do not view these services in isolation. The result is a partial picture of the costs associated with the efficiency and operation of the current Executive Branch e-mail services. We suspect the same holds true for many aspects of IT infrastructure and common sense should prevail when it comes to economies of scale and efficiency.

While we have tried to represent the findings in this report as accurately as possible, the overall quality of the data impedes our ability to make valid comparisons of the cost and quality of services across the current e-mail platforms. Central to the discussion of e-mail service delivery options is a determination as to whether e-mail is to be regarded as an agency resource or an enterprise resource.

In light of the information developed, we feel the fully consolidated e-mail service offers the greatest opportunity to reduce: a) the overall number of servers and associated infrastructure; b) e-mail platform administration and maintenance; and c) server software licensing costs. However, as documented in the attached report, the Hybrid Option also provides improvement over the existing approach. The consolidation would also be consistent with the goals of the Green Government Executive Order Number 6.

Throughout the preparation of this report, we have used processes that encouraged agencies to represent their diverse needs and concerns and feel they are represented here. We would like to thank the Department of Management for their assistance in facilitating this study.

Sincerely,

John Gillispie
Co-Chair

Rick Hindman
Co-Chair

Acknowledgements

Participating Chief Information / Technology Officers

Jim Anderson
Education

Dale Anthony
Public Health

Rob Buchwald
Veterans Home

Kerry Carman
Iowa Finance Authority

Curtis Chong
Blind Commission

Leon Frederick
Public Safety

Steve Gast
Department of Transportation

Evelyn Halterman
Lottery Authority

Alan Harder
IID

Marie Harms
State Library

R.J. Hellstern
Workforce Development

David Huang
Commerce – Banking

Tom Huisman
Department of Human Services

Rich Jacobs
Revenue

Tim McLaughlin
Inspections & Appeals

Margaret Munson
Iowa Utilities Board

Lesa Quinn
Department of Public Defense

Sarah Rapp
State Public Defender

Leon Schwartz
Iowa Public Employees Retirement System

Kevin VandeWall
Corrections

Facilitator

Michael Rohlf
Department of Management

Information Technology Enterprise Research and Support Staff

Wes Hunsberger

Jason Salts

Tom R. Shepherd

Diane Van Zante

State of Iowa – Executive Branch E-Mail Study

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State of Iowa Executive Branch[1] Email Services Study

Executive Summary

This E-Mail Study was conducted in response to the April 23, 2009 letter from the Governor's Chief of Staff. In response to this letter, the designated State Chief Information Officer (CIO) and the CIO Council sought to make a comprehensive examination of the cost, reliability, and operational aspects of the e-mail services in use by the Executive Branch.

The process used to conduct this study involved CIO's from each of the Executive Branch agencies included in the study. A steering committee was appointed and workgroups were assigned to specific areas of interest. A facilitated three-day retreat was also conducted to focus the efforts of this group and ensure this was a truly collaborative process. The workgroups were organized around the technical, operational, and financial aspects of e-mail services. Specifically, the following issues were addressed:

Technical Issues

- Documentation of the current e-mail services.
- Development of alternative service delivery models, including:
  - Fully consolidated e-mail services (internal service provider).
  - Hybrid services model (consolidation of the current federated environment into a limited number of e-mail platforms with various feature sets.)
  - E-Mail Services obtained from an external service provider (Software-As-A-Service).

Operational Issues

- Agency business requirements for e-mail services.
- Current domain names in use for e-mail and development of recommendations for a common domain naming scheme.

Financial Issues

- Estimated historical implementation costs for the current e-mail systems.
- Estimated annual ongoing costs for operation of e-mail.
- Agency-specific funding sources and issues.

[1] For the purposes of this study, the "Executive Branch" includes all statutorily designated executive branch entities EXCEPT the Offices of the Elected Officials and the Board of Regents and Regent's Institutions.

Results in Brief

The Cost of E-Mail

The CIO Council was tasked with developing: a) an understanding the costs of providing e-mail services to employees; and b) strategies to reduce those costs. From the data collected, the enterprise totals are as follows:

Executive Branch E-Mail Services[2]

Total E-Mail Boxes 25,000

Total E-Mail Box Capability 47,000

Total E-Mail Servers Currently in Use 59

E-Mail Hardware and Software Investment (one-time costs) ..... $1.3 million

Reported Annual Hardware, Software, & Labor Expenses ..... $1.5 million

Reported Enterprise Average Annual Cost Per Mailbox ..... $58.90[3]

One notable characteristic of the annual per mailbox cost was the wide variability of the data from agency to agency. State agencies spend between $16.46 and $741.29 annually per employee mailbox for the 23 e-mail platforms reported. The $58.90 average annual cost per mailbox is merely the arithmetic mean of the total estimated annual hardware, software, and labor costs divided by the total number of mailboxes. It does not include allocations for General and Administrative Costs or costs paid by other agencies in support of government operations. In addition, there is a significant over-provisioning of capacity as a result of the federated model for operations. It is difficult, if not impossible to eliminate this artifact in today's operational environment.

In the course of this study, most CIOs agreed that e-mail is a commodity. This means that it is a service for which there is a defined demand and the end-user is indifferent to who produces it, as long as it meets specified business requirements, including overall quality, functionality, and service levels.

In further examining the statistical spread on the data, the weighted average mailbox cost for systems above and below 500 users. The results were:

- Less than 500 users: $73.23 weighted average mailbox cost
- Greater than 500 users: $54.77 weighted average mailbox cost

It is important to note that the smaller systems are primarily basic e-mail services and the larger systems contain a wide range of additional features.

[2] These costs are based on available data – a number of agencies do not track and did not report data for their e-mail services. Also, these expenses do not include indirect (i.e. overhead and administrative) costs.

[3] This is an average of all e-mail boxes in the executive branch. Over half of these e-mail accounts have only basic e-mail services; the majority of these accounts have no e-mail archiving services or the ability to search the entire agency e-mail store by date, sender, or keyword.

Not all e-mail systems have the extensive search capabilities provided by vaulting or e-discovery tools that support the timely location and retrieval of e-mails by name, date, subject, and content in response to open records requests and legal discovery motions. Many of the e-mail platforms lack the redundancy and operational ability for adequate disaster recovery in accordance with their business requirements.

The Reliability of E-Mail

In the context of this report, reliability refers to the level of protection of the State's e-mail service delivery platforms (including the associated networking and storage systems) from internal and external threats; the availability and consistency of e-mail-related services and functions; and the restoration of e-mail services in the event of a disaster.

There is a high degree of variability in the features and functionality of e-mail services across the Executive Branch. The services and features and amount of storage available to e-mail users vary by agency, business requirements, and the availability of funds. Very small agencies running their own e-mail service often have a single e-mail server maintained part-time by a member of staff who has some degree of training. Larger agencies may have redundant servers, backup personnel, and dedicated disaster recovery facilities.

One critical aspect of providing effective e-mail services to employees is dealing with SPAM. SPAM is unwanted, unsolicited bulk e-mails that flood the internet on a daily basis.

Each month Executive Branch e-mail servers receive about 150 million in-bound e-mail messages. The current executive branch e-mail gateway software identifies SPAM and blocks over 147 million (or just over 98%) of those messages. By using filters customized for the State's specific business needs, state government surpasses the average SPAM filtering rates reported for the Retail, Education, Chemical & Pharmaceutical, and Finance sectors by 10% to 15%[4].

Approximately 40% of executive branch e-mail users have access to electronic archiving services with some kind of electronic search capability or electronic finding aids to assist in locating e-mails by date, subject, sender, or other relevant criteria. Those e-mail users without such functionality would be challenged in servicing comprehensive open records or legal discovery requests within the statutory timelines.

The Operational Aspects of E-Mail

The operational aspects of e-mail examined in the course of this study encompassed the maintenance of the e-mail platforms to ensure consistent and compatible version and software patch levels; a common and consistent e-

[4] Source: MessageLabs Intelligence http://www.messagelabs.co.uk/intelligence.aspx.

mail addressing structure for official e-mail addresses; and the maintenance of the centralized e-mail directory. There was also an examination of agency policies and culminating in recommendations for an enterprise e-mail standard.

Regardless of the e-mail service delivery option, agencies would retain responsibility for managing and coordinating e-mail (i.e. approving and requesting mailbox creation and deletion; providing desktop support for e-mail users and client software; providing e-mail client licenses; and coordinating help desk requests with the e-mail service provider). Agency staff assigned to these duties would be unaffected by the choice of e-mail platform.

Findings and Recommendations

E-Mail Business Requirements

To assess the adequacy of e-mail services, it is necessary to document the enterprise business requirements for e-mail basic and special services. The basic e-mail features and services required by all state employees include:

- Secure access to the e-mail account (login ID and password).
- Ability to send and receive e-mail with attachments. The size of the attachments range up to 80 megabytes in size within state government and up to 20 megabytes in size externally.
- Mailbox size of 200 megabytes.
- Personal calendar with assignable permissions to allow the viewing and/or editing of the calendar by others.
- Contacts (address book) with access to an enterprise Global Address List and support for customizing and storing distribution lists.
- Task tracking or “To Do” list with a reminder feature.
- Anti-virus scanning of all incoming and outgoing e-mail traffic and SPAM filter for all incoming e-mail traffic.
- Internet e-mail addresses with specified state government domain name(s).

Ancillary E-Mail Services – These are the specialized e-mail related services required by agencies. The following list contains a description of these services and an approximation of the number in use throughout the Executive Branch.

- Secure special purpose mail accounts used for constituencies to submit forms, comments, etc. for specific purposes or programs) that can be securely accessed by multiple authorized employees to access and respond to incoming e-mail. There are approximately 300 special purpose mail accounts in use.
- Resource Accounts are used to assign conference rooms, specialized equipment, teleconference services, etc. and allows them to be reserved through the calendar services. There are approximately 1,200 resource accounts in use.
- Secure Internet Access to E-Mail Services. This is used for sending and reading e-mail and accessing calendars, tasks, etc. from diverse locations using only a web browser. There are approximately 18,000 employees with secure internet access to e-mail services.
- Unlimited Mailbox Capacity. About 17,500 e-mail boxes currently have no size limits imposed on them.
- E-mail archiving with online access that supports fast online search, retrieval and monitoring of e-mail. There are approximately 10,000 employees with e-mail archiving services available to them.

- Content Filtering that supports filtering e-mail containing inappropriate language, identify specific attachment types or track messages from specific senders. There are approximately 12,000 e-mail boxes subject to content filtering.
- Instant Messaging (IM) which provides secure, private enterprise messaging service with which users can interact in real-time. There are approximately 8,000 employees with private, secure instant messaging available to them.
- Encrypted E-mail to support security and confidentiality of regulated personally identifiable information. There are approximately 10,000 employees with access to services capable of sending and receiving encrypted e-mail.

The Approach Used for Addressing E-Mail Infrastructure and Operational Issues

Information was collected about the current state of e-mail services within the Executive Branch, the CIO Council appointed work groups to: a) document three alternative service delivery models (i.e. hybrid model, fully consolidated and Software as a Service); and b) examine funding, domain name, and policy issues associated with e-mail. The findings for the first seven tasks contained in the April 23, 2009 letter from the Governor's Office are presented in this report in the context of the four service delivery models. Following the findings, the CIOs have included their observations for each of the internal service alternatives. Tasks eight through ten are not dependent upon the service delivery methods and are addressed at the end of this report.

State of Iowa Executive Branch E-mail Current State

Executive Branch e-mail services have evolved over time and are currently delivered using 23 e-mail platforms comprised of 59 servers supporting just over 25,000 total e-mail accounts located in various state agencies. Of that number, 21,000 users are supported by the 8 largest e-mail platforms; the remaining 4,000 users are supported by the remaining 17 smaller e-mail platforms. The e-mail servers provide e-mail for all Executive Branch employees statewide. All but two very small systems (about 70 total mailboxes) are Microsoft Exchange servers and three of the Exchange e-mail platforms (about 16,500 users) currently use the Symantec E-mail vault product. There is approximately 10 terabytes of data currently stored on e-mail servers in the executive branch with an additional 1.88 terabytes added annually.

1. Understand existing costs and develop a strategy to reduce e-mail infrastructure costs for servers, storage, and networking.

Findings: As reported above, the current e-mail costs are:

Total E-Mail Boxes	25,000
Total E-Mail Box Capacity	47,000
Total E-Mail Servers Currently in Use	59
E-Mail Hardware and Software Investment (one-time costs)	$1.3 million
Reported Annual Hardware, Software, & Labor Expenses	$1.5 million
Reported Enterprise Average Annual Cost Per Mailbox	$58.90

There is considerable variability in the ancillary e-mail services (see e-mail business requirements above) offered from one e-mail platform to another. Capital costs are not easily recaptured from hardware and software that represent apparent excess capacity within the current federated model.

2. **Understand existing costs and develop a strategy to reduce e-mail administration costs – staffing and support.**

   Findings: The current federated e-mail implementation in the Executive Branch presents few, if any, practical alternatives for reducing e-mail staffing and support costs.

3. **Understand existing costs and develop a strategy to reduce software licensing costs.**

   Findings: The e-mail server software licenses are purchased from agency Microsoft contracts. There may be limited opportunities to aggregate these contracts and reduce costs; however, additional study needs to be done.

4. **Improve security for the e-mail platform and associated delivery and storage mechanisms.**

   Findings: The current environment is reasonably secure, attributable to constant monitoring, scanning, filtering, and defense in depth in some agencies. The complexity of the current environment provides opportunities for improving security and reducing risk.

5. **Improve reliability and consistency of e-mail-related services / functions provided to employees.**

   Findings: CIOs feel the services currently available to employees are driven by agency business requirements and meet their needs. It has also noted that a number of e-mail platforms have no vaulting or e-discovery services for searching across all mailboxes for content by name, date, subject, and content in response to open records requests and legal discovery motions.

6. **Improve the recovery period for restoring e-mail services to the enterprise in the event of a disaster.**

   Findings: It has been noted earlier in this report that a number of e-mail platforms offer no redundancy and would be substantially challenged to restore service in the event of a disaster.

7. **Improve the likelihood of maintaining the e-mail platform and clients at a consistent version and patch level.**

   Findings: There is currently no consistent coordination of version and patch levels for e-mail software across the enterprise. Each agency supporting its own e-mail platform performs the patching and updating to meet their own needs.

CIO Observations for the Current State of Executive Branch E-mail Services

- The duplicative nature of the current e-mail implementation results in increased costs.
- The various funding sources (i.e. State appropriations, federal matching funds, grants, trust and revolving funds) used by agencies to provide e-mail services create cash flow and other issues when considering consolidated approaches.
- Agencies believe the current e-mail services are secure and responsive to their needs.

- Mandated patching could improve the overall stability of e-mail systems and reduce the exposure to constantly emerging threats.
- The excess capacity and dedicated resources for each of the e-mail platforms tends to result in "stranded resources" that cannot be easily leveraged across the enterprise.

Hybrid E-mail Solution

A hybrid services model would require the consolidation of the current federated environment into a limited number of e-mail platforms (also referred to as "clouds"[5] with various feature sets. The end result would be two to four service providers (agencies) providing the e-mail services to all Executive Branch agencies. State agencies would choose their service provider based on business need, features, and services.

1. **Understand existing costs and develop a strategy to reduce e-mail infrastructure costs for servers, storage, and networking.**

   Findings: The hybrid option would reduce the enterprise infrastructure costs for servers, storage, and networking by requiring the agencies with fewer e-mail boxes to join an e-mail platform with the availability of features and services most closely matching their business requirements. Each of the e-mail platforms would be operated by an agency currently offering services to a substantial customer base. This would ensure the competency of the service provider(s) and would limit the scaling required to accommodate the new customers coming on to the platforms.

   This model could require agencies that are inexperienced in developing and operating chargeback systems to assume such an administrative burden. The workgroup stated an advantage of this approach as "provid(ing) agencies with customizable offerings instead of limiting agencies to a 'one size fits all' approach to consolidated e-mail" and "provide for additional diversity in cost structure for smaller agencies." While this may be the intent, the required chargeback systems may be complex.

   This service delivery model also requires well defined governance to ensure customer agencies have a voice in how the service is operated. While this is a consolidation approach, it would compounds the chargeback, administrative, and governance issues that would exist in a single consolidated e-mail platform.

2. **Understand existing costs and develop a strategy to reduce e-mail administration costs – staffing and support.**

   Findings: Agencies are currently staffed to serve their own e-mail administration needs. Doubling the number of accounts on an existing e-mail system will approximately double the amount of administrative time in setting up new accounts, but will not appreciably increase

[5] Cloud computing is a general term for anything that involves delivering hosted services over a network (either an internal network or the Internet). A cloud service has three distinct characteristics that differentiate it from traditional hosting. It is sold on demand, typically billed by time or by individual user; it is elastic, meaning a user can have as much or as little of a service as they want at any given time; and the service is fully managed by the provider – in the example of a "cloud" e-mail service, the user needs nothing but a personal computer, network access, and e-mail client software).

other administrative responsibilities. While it is difficult to assess the total e-mail staffing and support, reducing the number of e-mail systems will result in an overall reduction in enterprise e-mail staffing needs.

3. **Understand existing costs and develop a strategy to reduce software licensing costs.**

   Findings: Significant reduction in the number of e-mail platforms from 23 to 4 should reduce e-mail server licensing costs. E-mail client costs would be unaffected.

4. **Improve security for the e-mail platform and associated delivery and storage mechanisms.**

   Findings: Enterprise security and storage standards will apply to all final clouds. Enhancements such as Data Loss Protection[6] will be more easily implemented on fewer systems. From the client perspective, the delivery of e-mail may suffer under any of the service delivery models due to network bandwidth and latency. Agencies whose workers are on a local area network with the e-mail servers may experience more responsive service when compared to workers on a wide area network connection.

5. **Improve reliability and consistency of e-mail-related services / functions provided to employees.**

   Findings: A substantially smaller number of e-mail platforms should reduce the overall complexity of the e-mail environment and provide for a more consistent level of services and features across the enterprise.

6. **Improve the recovery period for restoring e-mail services to the enterprise in the event of a disaster.**

   Findings: Each of the four e-mail platforms would be required to have appropriate server redundancy and a continuity of operations plan that could be executed in the event of a disaster. To meet the requested disaster recovery service levels of its customers, e-mail platforms would be architected to include server redundancy, reduce single points of failure, and include services to support backup ad recovery. Requirements, and ultimately standards, would need to be defined for disaster recovery within each cloud.

7. **Improve the likelihood of maintaining the e-mail platform and clients at a consistent version and patch level.**

   Findings: Reducing the overall complexity of the e-mail environment would assist in facilitating the coordination of software versions and patch levels across the enterprise.

CIO Observations on the Hybrid E-mail Solution

- Given the limited choice of e-mail platforms, agencies with similar requirements will align.

[6] Data Loss Protection (DLP) is a product for monitoring a wide breadth of activities to detect the misuse of sensitive data. Upon the detection of inappropriate behavior (i.e. release of certain personally identifiable information), it takes a predefined action to protect the data and prevent loss. It provides customizable levels of control at endpoints, over networks, at the message server, and for stored data.

- Even though this would reduce the overall number of e-mail platforms, we are not confident this option would reduce the overall cost of human resources to the same extent as complete consolidation.
- Funding source restrictions may limit the ability to add other customers not in the same funding stream.
- Other than strict business requirements, would other criteria be used to distribute (or equalize) the customer base among the e-mail platforms?
- Concentrating the e-mail administration expertise to a small number of platforms will save training dollars for agencies giving up their e-mail platforms.
- The hybrid option may have an easier implementation than total consolidation since it encourages the continued use of existing, newer equipment until the equipment can be depreciated and is ready for replacement. At that time, further consolidation could more easily take place. This process may be more acceptable to a wider number of agencies.
- Some agencies have concerns that a consolidated e-mail system could result in violations of security requirements placed on them by Federal agencies (e.g. FBI, Internal Revenue Service, etc). Violation of these requirements could lead to the possibility of being disconnected, or losing valuable services currently available. Any implementation would need to address these stringent requirements.

Fully Consolidated Single E-Mail Service from an Internal Service Provider

This would be a fully consolidated e-mail system offering a full range of services from an internal service provider.

1. **Understand existing costs and develop a strategy to reduce e-mail infrastructure costs for servers, storage, and networking.**

   Findings: The consolidated single e-mail service platform will provide the maximum reduction of e-mail infrastructure costs of all the internal solutions considered. It provides for the maximum economies of scale and would be sized for the enterprise customer base plus 8% to 10% to allow for normal growth, special projects, and emergency needs. The price per mailbox would be customized based on the services and features used but there would be no attempt at a one size fits all approach. This option would achieve the maximum economies of scale and the benefits would accrue to all customer agencies.

2. **Understand existing costs and develop a strategy to reduce e-mail administration costs – staffing and support.**

   Findings: The consolidated single e-mail service platform provides for the maximum productivity of e-mail server administration and support personnel by aggregating the entire customer base on one platform.

3. **Understand existing costs and develop a strategy to reduce software licensing costs.**

   Findings: The elimination of 23 systems currently licensed and running Microsoft Exchange would result in a substantial reduction in costs.

4. **Improve security for the e-mail platform and associated delivery and storage mechanisms.**

   Findings: Enterprise security and storage standards and enhancements such as Data Loss Protection will be most easily implemented on a single, consolidated system. The consolidated model lends itself to a comprehensive defense in depth strategy, which, by design, would afford better protection than our current diversified strategy. From the client perspective, the delivery of e-mail may suffer under any of the service delivery models due to network bandwidth and latency. If a security breach occurs on a fully consolidated e-mail system, the entire State e-mail service could be compromised.

5. **Improve reliability and consistency of e-mail-related services / functions provided to employees.**

   Findings: This option will dramatically reduce the complexity of the current operating environment. Standardized feature sets would simplify employee training and provide an opportunity for senior policy makers to cost out and specify services and features that are to be available to all employees and enforce enterprise e-mail retention and usage policies.

6. **Improve the recovery period for restoring e-mail services to the enterprise in the event of a disaster.**

   Findings: The consolidated e-mail platform would be implemented using fully redundant servers in a newly refurbished, highly secure data center in Des Moines and would take advantage of an existing state-of-the-art business recovery center located at the Joint Forces Headquarters Armory at Camp Dodge in Johnston, Iowa.

7. **Improve the likelihood of maintaining the e-mail platform and clients at a consistent version and patch level.**

   Findings: The e-mail platform would be maintained at consistent, current version and patch levels by trained administrators in close collaboration with customer representatives, network engineers, and the enterprise information security office. This team would provide guidance and support to all customer organizations and give direction on e-mail client patch levels.

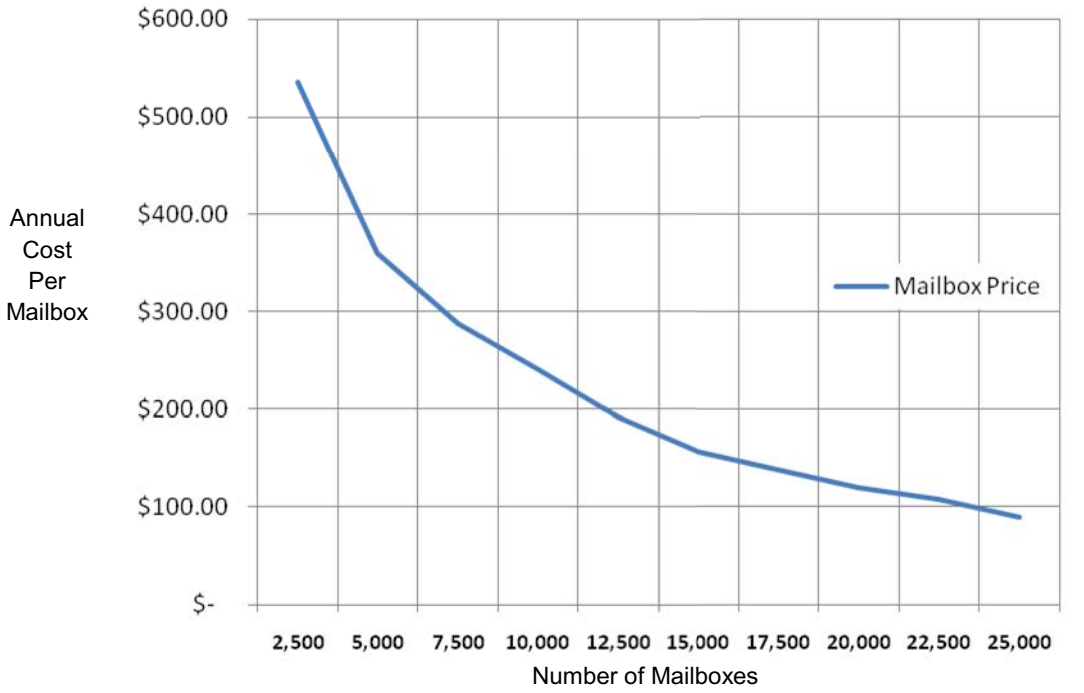
CIO Observations on a Fully Consolidated Single E-Mail Service from an Internal Service Provider

- A fully consolidated e-mail platform would maximize enterprise infrastructure savings.
- This option could leverage existing capital assets and licenses enterprise-wide.
- The funding for specialized e-mail administrator training would be targeted at a small cohort.
- Retirement of undepreciated assets would add to the cost of implementation.
- Some agencies have concerns that a consolidated e-mail system could result in violations of security requirements placed on them by Federal agencies (e.g. FBI, Internal Revenue Service, etc). Violation of these requirements could lead to the possibility of being

disconnected and, or losing valuable services currently available. Any implementation would need to address these stringent requirements.

- It is estimated that moving to a fully consolidated e-mail system would reduce the enterprise Exchange server count from 57 to 34 (a savings of 23 servers). At an average annual cost per server of $1,930 and an average annual cost per software license of $640, this would reduce annual costs by (1,930 + 640) X 23 servers = $58,880.
- ITE stands ready today to add any state agencies to the existing enterprise e-mail platform. An analysis of the price sensitivity to mailbox volume clearly illustrates the economies of scale, with per mailbox cost decreasing as volume increases (see Figure 1).

Figure 1. Price Sensitivity (Annual Mailbox Cost) to Mailbox Volume



Software-as-a-Service (SaaS)

In a SaaS service model, a service provider licenses an application such as e-mail to customers for use as a service on demand. SaaS software vendors may host the application on their own servers or download the application to the customer's devices. Certain on-demand functions may be handled internally to share licenses within an organization or by a third-party application service provider sharing licenses between organizations. The sharing of end-user licenses and on-demand use may reduce investment in server hardware or shift server use to SaaS suppliers of applications and services. Characteristics of SaaS software include network-based access to, and management of, commercially available software.

Findings: The request for information (RFI) the CIO Council issued to gather information from the vendor community about e-mail service offerings received eleven responses, including responses from service providers in the United States, Canada, and Great Britain.

Forrester and Info-Tech research services expressed opinions that SAAS e-mail service is an emerging, but not yet mature industry. While the RFI responses indicated there were a number of service providers that could meet all of the State's business requirements, these responses have not been examined in detail. Not all respondents included pricing information and the pricing that was provided would require considerable effort to establish pricing models that could be compared to internal costs.

The two most significant areas of concern with SaaS were the security of the State's e-mail and the sovereignty of the State's data. From a purely operational standpoint with high speed servers and networking, it is irrelevant where the service actually resides – under normal circumstances, the data would be continuously available with no appreciable latency. From a practical standpoint, once the data starts to traverse political borders nationally and internationally, there may be uncertainty in the availability of the data and the laws governing it. This is such a new set of issues, there is virtually no case law to provide guidance and our legal community has no experience or guidance upon which to base recommendations.

CIO Observations on Software-as-a-Service (SaaS)
The service providers and overall market for such services should be monitored and if, in the future, we feel there is sufficient guidance for the IT community to address the security and sovereignty issues, it would be advisable to issue a detailed Request for Proposals that would provide detailed operational and pricing models that would support valid comparisons without internal costs.

E-Mail Addressing, Common Directory, and E-Mail Policies (Tasks 8, 9, and 10)

8. Present a common and consistent e-mail addressing structure to Iowa citizens – i.e. e-mail.user@iowa.gov

Findings: The E-Mail Naming Standards Workgroup examined the issues associated with standardizing state employee e-mail addresses. Currently, state agencies use between one and seven naming conventions for e-mail. It was generally agreed that this was potentially confusing for constituents; however, agencies asserted:

- Some agencies have pursued a branding and communication strategy based on their business requirements and are well known for their current address. They wish to avoid the public confusion that may accompany a change in e-mail domain names. Agencies are also using their current addresses on many publications. (i.e. **info@agency.org**)
- Costs for implementation vary due to technical and labor costs depending on the agency and agency employee size.

Considerable work has been done by many agencies in the past few years to establish "iowa.gov" addresses for their employees. The workgroup recommended that all existing e-mail addresses should be retained; however, each agency must assign an alias using the newly established standard naming sequence. This uniform naming format will allow state employees to be addressable by common and consistent elements. It will support agency

flexibility, yet will be a common naming standard for the public to use and assist constituents in getting e-mail to proper functional areas within state government. The naming convention would be structured as follows:

Firstname.Lastname@agencyid.iowa.gov

The agency ID would be a 3-character identifier that would be assigned to each agency or major functional unit by the Department of Management, much the same as the U.S. Postal Service has designated an official 2 character abbreviation for each State. Identifying both the employee and the employing agency has the dual advantages of: a) reducing the name conflicts (e.g. two Larry Clarks or Steve Millers within Iowa.gov but only one in a specific agency); and b) ensuring that e-mails would still be routed to the appropriate state agency even in the employee moves to another agency. Agencies would have to develop policies to deal with business e-mails received for former employees but would be in receipt of the e-mail and could process it without unnecessary delays or routing.

9. **Provide a centralized e-mail directory for all Executive Branch agencies that is easy to use and easy to administer.**

   Findings: On April 3, 2009, the Executive Branch participating agencies implemented information technology Standard S-006-001. This standard addresses the integration of e-mail systems for the state workforce and provides secure, seamless and integrated cross agency functionality. One section of this standard specifically addresses provisions for streamlining the processes to be used to keep the global address list current. The compliance deadline for this standard is September 1, 2009.

10. **Gain an understanding of the various agency policies – differences and similarities – that impact delivery of e-mail services and incorporate best practices into an enterprise standard including mailbox size; records retention, archive, and open records requests; remote access to e-mail; application / web integration; service levels / response times; and continuity of operations / continuity of government.**

    Findings: The data collected for this study shows that agencies have differing philosophies on virtually every aspect of e-mail. This study found:

    - About 30% of e-mail boxes have size limits imposed on them, with the remainder having no size limits.
    - We don't have consistency in terms of services offered to end users, software versions supported, or clients on desktops.
    - Not all expenditures are consistently reported or tracked. There are challenges with tracking capital and upgrades, particularly in how expenditures are initiated and funded.
    - Virtually all agencies have e-mail related policies, but they are "consistently inconsistent". Much of this inconsistency is attributable to conflicting advice from legal counsel. This is especially troublesome as it applies to records retention and disposition guidelines.

- Agencies do not consistently view e-mail through the same lens. Some agencies see e-mail as mission critical, some do not. This is difficult to reconcile and one size does not fit all.
- For most e-mail platforms, service levels are not tracked and most agencies can't produce regular performance measurements. The data does not indicate with any reasonable degree of accuracy what it takes in terms of people to support the current e-mail systems. With few exceptions, there are no detailed timekeeping systems and it is difficult to differentiate between end user support and server administration. It is assumed there is probably redundancy in terms of training, process, management, and general overhead, but this has proven difficult to document.
- There is clear duplication of hardware in terms of processors, storage, backup, and recovery, which leads to over licensing.
- Agencies are currently adhering to the Microsoft guidelines on a wide variety of issues pertaining to the operation of their e-mail systems as part of our current best practice observance.

Funding Considerations

When assessing the options for e-mail delivery and the associated costs, we felt it was important to document the various financial issues associated with the current and future funding of e-mail services. State agencies use different funding sources and methods to fund e-mail expenses.

Changes in e-mail services will incur transition costs to agencies which, in some cases, will be significant. These may include costs due to domain changes, name changes, abandonment of existing hardware and infrastructure, and the possibility of increased network costs.

Agency Funding Methods

Agencies use different methods for funding their e-mail systems, including:

- Payment of Monthly Fee – This includes agencies purchasing e-mail services from a service provider. The fees include server infrastructure (hardware and software) but not client software. Support is generally included in these fees; however, it is likely there is some support being performed by agency staff.
- Pay as available – This includes several variations. Server Infrastructure (hardware and software) is funded as needed and/or available. Funding sources may include:
    - Special appropriation requests within the agency budget;
    - Payments from revolving funds;
    - Grants;
    - Federal funds; and
    - Budgeted funds with matching federal funds.

With pay as available, local support is usually performed by agency staff and funded by budgeted funds for salaries. A number of these FTEs are funded using Federal Indirect funds from federal grants.

Issues Associated With Potential Staff Reductions

Our survey indicated a total of 6.0 FTEs enterprise-wide currently engaged in directly administering the e-mail platforms. While there is no detailed information available for most of these e-mail platforms, many agencies operating their own e-mail services estimate a partial FTE spending 4 hours or less per week administering their e-mail system. One large agency reporting 1.25 FTEs used for e-mail administration further reports that this responsibility is shared among 4 expert staff members with broad skills. This makes it challenging to realize savings from staff reductions since it is expected these partial FTEs would be re-tasked to other duties if their agency e-mail system was replaced with a hybrid, SaaS, or consolidated e-mail platform.

Disposition of Assets

Any substantive change in the service delivery mechanisms for e-mail would free up software licenses and server hardware enterprise-wide. A significant number of these servers have already exhausted a substantial part of their useful lives[7] and a number of these servers are not enterprise-class machines, which would negate their redeployment for enterprise class services. They may be re-tasked by individual agencies, however, that may run counter to the successful server virtualization trend currently under way in the Executive Branch.

We would also need to identify assets obtained using Federal funds and ensure they were handled according to the funding guidelines in place for each asset.

Considerations for Moving to a Central E-Mail Provider With Monthly Fees

- There would be no change for current 'monthly fee' agencies, other than the impacts of rate differences.
- This option creates a static funding requirement and net cash expense (and perhaps cost increase) for agencies that currently operate with the 'pay as available' model.
- Transition costs and cash flow issues need to be identified and analyzed with agencies given sufficient time to make the appropriate budget adjustments. Any changes that affect the agencies current funding approach will likely be perceived as additional expenses to the agency.
- Savings associated with changes in e-mail services won't necessarily affect all agencies equally. Changes may end up creating a net cash expense to some agencies and savings to others.

Suggested Funding Options

- Co-op: All agencies pay a monthly fee per mailbox.

[7] This is based on widely varying estimates of useful lives and deployment dates provided by agencies – no accurate records are apparently available for many of the servers.

- Blended: This option would be a variation of the Co-op where those agencies that have no budget allotment for e-mail could negotiate a payment plan that would fit their existing funding model until budget adjustments could be made.
- State appropriation: Since this is an essential function to all state agencies and a top priority to the Governor's Office, enterprise e-mail could be funded through a direct appropriation.

Appendix A. April 23, 2009 Letter from Charles Krogmeier to John Gillispie and Rick Hindman Requesting an Examination of Executive Branch E-Mail Services and Costs

CHESTER J. CULVER
GOVERNOR

OFFICE OF THE GOVERNOR

PATTY JUDGE
LT. GOVERNOR

April 23, 2009

Rick Hindman
Chair, Chief Information Officer Council
John Gillispie
Chair, Joint Chief Information Officers

Dear Rick and John:

Today many agencies receive email from a centralized service provider, DAS-ITE. Other agencies provide email services for their own agencies in a de-centralized structure. Costs associated with email delivery and administration are calculated differently by each agency, as are the associated service levels, response times, functions, and support differs from agency to agency.

The Chief Information Officers Council, in collaboration with the Joint Chief Information Officers, will examine the costs and associated service levels associated with delivering email services to state employees in the executive branch as those costs and services exist currently.
Specific tasks, I would like the Chief Information Officers Council to perform are:

1. Understand existing costs and develop a strategy to reduce e-mail infrastructure costs – servers, storage and networking
2. Understand existing costs and develop a strategy to reduce email administration costs – staffing and support
3. Understand existing costs and develop a strategy to reduce software licensing costs
4. Improve security for the email platform and associated delivery and storage mechanisms
5. Improve reliability and consistency of email-related services / functions provided to employees
6. Improve upon the recovery period for restoring email services to the enterprise in the event of disaster
7. Improve upon the likelihood of maintaining the email platform and clients at a consistent version and patch level
8. Present a common and consistent email addressing structure to Iowa citizens – i.e. email.user@ Iowa.gov

STATE CAPITOL DES MOINES, IOWA 50319 515.281.5211 FAX 515.281.6611 WWW.GOVERNOR.IOWA.GOV

CHESTER J. CULVER
GOVERNOR

OFFICE OF THE GOVERNOR

PATTY JUDGE
LT. GOVERNOR

9. Provide a centralized email directory for all executive branch agencies that is easy to use and easy to administer

10. Gain an understanding of the various agency policies – differences and similarities - that impact delivery of email services and incorporate best practices into an enterprise standard:
    a. Mailbox size
    b. Email retention, archive, and open records requests
    c. Remote Access to Email
    d. Application / web integration
    e. Service Levels / Response Times
    f. COOP / COG

The Chief Information Officers Council will deliver to the Technology Governance Board and the Governor's Office a written report detailing their findings and provide a recommendation for addressing the ten items detailed above no later than September 1, 2009.

Sincerely,

Charles Krogmeier
Chief of Staff

CC: Mark Schuling

STATE CAPITOL DES MOINES, IOWA 50319 515.281.5211 FAX 515.281.6611 WWW.GOVERNOR.IOWA.GOV

Appendix B. Current Executive Branch E-Mail Platforms

The current e-mail services have evolved over time and are currently delivered using 25 e-mail platforms with 59 servers supporting just over 25,000 total accounts located in various agencies. (See Tables 1 and 2)

Table 1. DAS-ITE E-Mail Service and Number of Mailboxes (Total Mailboxes - 3,838)

Agency	Mail Accounts	Agency	Mail Accounts
Administrative Services	546	Ethics & Campaign Disclosure	7
Board of Medicine	28	Governor's Office	65
Board of Nursing	22	Human Rights	73
Board of Pharmacy	17	Inspections and Appeals	361
Civil Rights	45	Iowa Agricultural Development Authority	8
College Student Aid Commission	76	Iowa Communications Network	157
Commerce – Alcoholic Beverages	39	Iowa Dental Board	10
Commerce – Professional Licensing	17	Iowa Law Enforcement Academy	28
Consumer Advocate, Office of	21	Management	39
Cultural Affairs	91	Natural Resources	1,437
Drug Control Policy, Office of	9	Parole Board	19
Economic Development	193	Public Employment Relations Board	13
Education – Vocational Rehabilitation	381	Rebuild Iowa Office	44
Elder Affairs	48	Treasurer of State	32
Energy Independence, Office of	12		

Table 2. Agencies Hosting Their Own E-Mail Service (Total Mailboxes - 21,679)

Agency	Mail Accounts	Agency	Mail Accounts
Blind	141	Iowa Lottery Authority	127
Commerce – Banking	80	Iowa Public Employees Retirement	161
Commerce – Credit Union	27	Public Defense*	262
Commerce – Insurance	128	Public Health	458
Commerce – Utilities	93	Public Safety	1,058
Corrections	4,801	Racing/Gaming Commission	66
Education – Public Television	153	Revenue	519
Education – State Library	30	State Public Defender	216
Education	458	Transportation	2,983
Human Services	6,933	Veterans Home	1,145
Iowa Finance Authority	159	Workforce Development	1,681

* Public Defense includes Homeland Security and Veteran's Affairs.

Appendix C. Executive Branch E-Mail Consolidation from an Outside Perspective

In December 2008 five private sector CIOs met with State CIOs to discuss Executive Branch governance of information technology (IT) and give their advice on improvements for state government. This group consisted of Atul Gupta, Chairman & CEO of Advanced Technologies Group, Inc. and a Technology Governance Board member); Doug Gumm, FBL Financial Group; Philip Krenc, MidAmerican Energy; Stephen Printz, Pella Corporation; and Gary Scholten, Principal Financial Group.

The State CIOs explained the IT governance in place within the Executive Branch and discussed the various challenges confronting state government; the private sector CIOs confirmed they were facing many of the same issues. They felt the executive branch IT governance structure in place was a good way to address the issues confronting a diverse organization of our size.

They expressed surprise, however, at the lack of progress the State has made in the area of shared and consolidated services. One example they cited was e-mail systems. They explained that in their companies, individual divisions would have neither the need nor the ability to establish and manage their own e-mail system. Doing so would be unnecessarily costly and duplicative and would increase the complexity of the technology infrastructure with no added benefit. They did say that, in some instances, there were regulatory or legal issues that required certain functional units within their organization to have dedicated e-mail services. In those cases, they segregate those services; however, the resulting e-mail systems are operated and maintained by the same technical staff.

The CIOs did not expect to find such diverse e-mail systems and other services that, in their opinion, should have been commoditized long ago. They acknowledged that within their companies, when consolidating services to achieve the maximum economies of scale, certain business units may find no additional benefit or value in the shared service, while other business units may enjoy reduced operating costs, greater security and availability, and additional features and functions from the consolidated service. Their perception was that significant value accrued to the bottom line in their organizations from such consolidations.

Appendix D. Executive Branch E-Mail Disaster Preparedness

Disaster Recovery Planning - State of Iowa Executive Branch agencies using disaster recovery planning software have standardized on a product called the Living Disaster Recovery Planning System (LDRPS). This system provides tools to assess critical operations and essential functions, services, and plans for the backup and restoration of these functions and services in the event of a disaster. LDRPS categorizes functions and services by criticality, down time, and allowable disruptions (see Table 1).

Table 1. LDRPS Recovery Categories

Criticality	Down Time*	Allowable Disruptions
AAA - Mission Critical	0 hours	Virtually no disruption of operations
AA - Mission Critical	12 hours	Negligible disruption of operations
A - Mission Critical	72 hours	Nominal disruption of operations
B - Important	7 days	Minimal disruption of operations
C - Non-Critical	14 days	Minor disruption of operations
D - Non-essential	30 days	Moderate disruption of operations

* Key considerations when determining acceptable downtime:

- While an essential function is down, is something irrevocably lost?
- What is an acceptable backlog?

Table 2. This table shows the Executive Branch E-Mail Systems criticality assessments and recovery objectives (from table 1.)

Agency	Mail Accounts	Criticality Assessment
Blind	141	C
Commerce – Banking	80	AA
Commerce – Credit Union	27	A
Commerce – Insurance	128	AA
Commerce – Utilities	93	AAA
Corrections	4,801	AA
Education – Public Television	153	AA
Education – State Library	30	D
Education	458	B
Human Services	6,933	AA
Information Technology Enterprise	3,838	AA
Iowa Finance Authority	159	B
Iowa Lottery Authority	127	AA
Iowa Public Employees Retirement	161	AA
Public Defense (including Homeland Security & Veterans Affairs)	262	AA
Public Health	458	AAA
Public Safety	1,058	AA
Racing/Gaming Commission	66	A
Revenue	519	C
State Public Defender	216	-
Transportation	2,983	AA
Iowa Veterans Home	1,145	AA
Workforce Development	1,681	AA